

PATENT ABSTRACTS OF JAPAN

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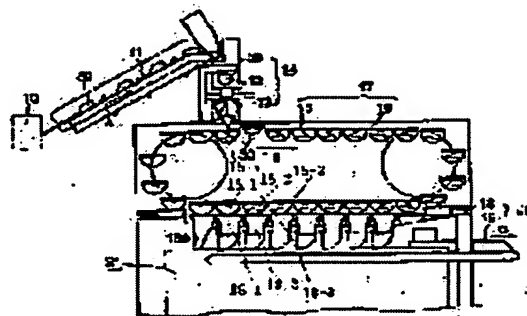
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(54) COMBINATION WEIGHING METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent the deterioration of an article caused by the stagnation of the article in a combination weighing machine over a long time by employing a first-in first-out system for discharging the article in weighing order in a combination weighing method.

SOLUTION: In the combination weighing method wherein the weighing value of the foremost filling cup always becomes one of the constituent numerical values of combination calculation, when not received in an allowable range in a predetermined number of times of combination calculation to become combination defectiveness, the article to be weighed in the foremost filling cup, that is, a cup filled with the article to be weighed not yet selected in combination and most temporally elapsed from the filling point of time of the article to be weighed is preferentially selected to be discharged.



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CLAIMS

[Claim(s)]

[Claim 1] The combination measuring method which is a combination measuring method with which the measured value of a **** restoration cup is always set to one of the configuration numeric values of combination count, and is characterized by discharging the measured object of this maximum ***** cup when not fitting in the tolerance in combination count of the count of predetermined and becoming poor [combination].

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention relates to the measuring method which chooses the combination of goods with the gravimetry approach, i.e., the sum total weight, or quantity of combination nearest to desired value.

[0002]

[Description of the Prior Art] The automatic measuring method which gathers a certain constant rate combining what is a small unit object and has a random amount exists variously conventionally. And rather than one set or several sets of the type which arranges the group of the combination hopper corresponding to two or more weigh machines and it for a measuring object in horizontal 1 train or a flat-surface circle configuration, and combines the measuring object, and weigh machines, and a weigh machine, the automatic metering installation arranges many combination hoppers to horizontal circulation or perpendicular circulation, carries out circulation rotation, and has the type which discharges the product put together.

[0003] And in the conventional automatic combination measuring method using these equipments, combination count was calculating the combination about all the measured measured value, for example as indicated by JP,54-14946,B, JP,58-48845,B, etc. Therefore, what combination is poor and is not chosen might pile up in the combination weigh machine equipment of a product over long duration. Also in the cycloid type, it might be discharged, after making it circulate several times while not having been chosen.

[0004] It remained in the combination weigh machine equipment of a product, without being chosen as JP,04-14289,B for a long time, without the ability of a specific weigh machine participating in the optimal combination, the article of a measured object deteriorated, or when an article was a frozen object, it was shown that there are problems, such as beginning to melt, and the solution is proposed. That is, although it divides into multiple times and measures as compared with the average amount of supply of the article per weigh machine when setting weight is large, in this multiplex combination measuring method, only measuring of the last round is performed with high precision among measuring of multiple times, and it is considering as the configuration which incorporates preferentially the weigh machine which is hard to be discharged by other measuring operations. Degradation of the article for not discharging for a long time can be prevented by this, and it is supposed that the weigh machine which does not join a combination operation can be decreased.

[0005] Since possibility of the weigh machine which the weigh machine with a large weight value becomes it being hard to be chosen as the optimal combination, and participates in a combination operation substantially decreasing, and becoming poor [combination] becomes high in this measuring system when there is a weigh machine with a big weight value, in measuring of those other than the last round, it is supposed that a weigh machine with a large weight value is selected preferentially, and an article will be discharged. The input weight from each weigh machine is arranged in heavy order, a weight value is added to heavy order, and the combination in tolerance is searched for.

[0006]

[Problem(s) to be Solved by the Invention] The measuring system of above-mentioned JP,04-14289,B is the thing of an about, when dividing into multiple times and measuring an article, and it still remains as a problem that a product piles up in a combination weigh machine, and influences the quality over long duration to the case where an article is measured at once.
[0007]

[Means for Solving the Problem] In order to solve stagnation within the combination weigh machine of the product covering long duration, in this invention, the first-in, first-out discharged in the measured order is taken. As a means for that, by invention of claim 1, it is the combination measuring method with which the measured value of a ** point restoration cup is always set to one of the configuration numeric values of combination count, and when not fitting in tolerance in combination count of the count of predetermined and becoming poor [combination], it is characterized by discharging the measured object of this maximum ***** cup. A ** point restoration cup here is a cup from which it fills up with the measured object which is not yet selected by combination, and the thing of a cup which has passed through time amount most since the restoration point in time of a measured object is said.

[0008]

[Embodiment of the Invention] This invention is explained to a detail based on the gestalt of operation shown in a drawing below. Drawing 1 is the outline block diagram of the perpendicular cycloid type automatic metering installation by the combination measuring method of this invention. Drawing 2 is the outline block diagram of the horizontal circulation mold automatic metering installation by the combination measuring method of this invention.

[0009] drawing 1 --- setting --- for example, the measured objects 50, such as a piece of meat of a broiler, --- the automatic separate charging machine 10 --- a crosspiece --- the with band conveyor 11 is supplied. The measured object 50 conveyed in the direction of an arrow head A is sent to the circulation conveyance section 17 which consists of a circulation conveyance way 16 through which the conveyance tray 15 is attached and it circulates to a perpendicular from the foods division measuring injection section 14 which consists of a weigh machine 12 and a hopper 13. A measured object may be lifted and measured when a combination cup comes to the location of the next conveyance tray of conveyance tray 15-n directly under a hopper besides in the case of being measured with a weigh machine 12. A measured object is conveyed in the direction of an arrow head B in the circulation conveyance section 17, and the combination cup chosen by the combination operation between them discharges a measured object in the corresponding storage container 18. The product by which combination measuring was carried out is discharged by the taking-out conveyor 19, and the storage container transfer section 20 is conveyed in the direction of an arrow head C.

[0010] In the automatic combination operation part 21, the combination measuring method with which the measured value of a ** point restoration cup is always set to one of the configuration numeric values of combination count is taken.

[0011] For example, by drawing 1 , the combination cup 15-1, 15-2, and 15-4 are made into the 1st success combination, and packing of the 2nd success combination, then the 1st success combination is accumulated by the storage container 18-1 in the combination cup 15-3, 15-6, and 15-7, next packing of the 2nd success combination is accumulated by the storage container 18-2.

[0012] In the next count, 15-5 becomes a ** point restoration cup. The case of the poor count combination of predetermined is discharged through 18a, and this packing is immediately returned to the START point of 10. And in the next count, 15-8 becomes a ** point restoration cup, and the same count continues. In this system, FIFO can attain nearly completely. And automatic measuring is carried out, without a food material being overdue.

[0013] Drawing 2 is the outline block diagram of the horizontal circulation mold automatic metering installation by the combination measuring method of this invention. To the bottom of a weigh machine, this arranges many combination cups in a circle configuration, and carries out horizontal circulation of the combination cup 15, i.e., the conveyance tray. An arm 23 is attached in a revolving shaft 22 at a radial, and it is considering as the configuration which arranges the conveyance tray 15 at the tip of an arm 23.

[0014] drawing 2 -- setting -- the measured object 50 -- a crosspiece -- the with band conveyor 11 is supplied. The measured object 50 conveyed in the direction of an arrow head A2 is sent to the circulation conveyance section 17 which consists of a circulation conveyance way 16 through which the conveyance tray 15 is attached and it circulates at a horizontal from the foods division measuring injection section 14 which consists of a weigh machine 12 and a hopper 13. A measured object is conveyed in the direction of arrow-head B-2 in the circulation conveyance section 17, and the combination cup chosen by the combination operation between them discharges a measured object in the corresponding storage container 18. The product by which combination measuring was carried out is discharged by the taking-out conveyor 19, and the storage container transfer section 20 is conveyed in the direction of an arrow head C2.

[0015]

[Effect of the Invention] This invention is carried out with a gestalt which was explained above, and does so effectiveness which is indicated below.

[0016] Since the measured object of this maximum ***** cup was discharged when not fitting in tolerance in combination count of the count of predetermined and becoming poor [combination], while taking the combination measuring method with which the measured value of a **** restoration cup is always set to one of the configuration numeric values of combination count, stagnation within the combination weigh machine of the product covering long duration is prevented.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the outline block diagram of the perpendicular cycloid type automatic metering installation by the combination measuring method of this invention.

[Drawing 2] It is the outline block diagram of the horizontal circulation mold automatic metering installation by the combination measuring method of this invention.

[Description of Notations]

- 10 Automatic Separate Charging Machine
- 11 Crosspiece -- with Band Conveyor
- 12 Weigh Machine
- 13 Hopper
- 14 Foods Division Measuring Injection Section
- 15 Conveyance Tray, Combination Cup
- 16 Circulation Conveyance Way
- 17 Circulation Conveyance Section
- 18 Storage Container Group
- 19 Taking-Out Conveyor
- 20 Storage Container Transfer Section
- 21 Automatic Combination Operation Part
- 22 Revolving Shaft
- 23 Arm

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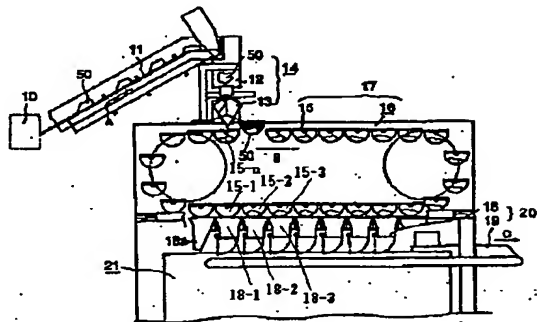
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(54) 【発明の名称】 組合せ計量方法

(57) 【要約】

【課題】 組合せ計量方式において、計量した順に排出する先入れ先出し法を採ることにより、長時間にわたる製品の組合せ計量機内での滞留による品物劣化を防止する。

【解決手段】 最先充填カップの計量値が常に組合せ計算の構成数値の一つとなる組合せ計量方法であって、所定回数の組合せ計算で許容範囲に収まらず組合せ不良となる場合に、該最先充填カップ、すなわち未だ組合せに選定されていない被計量物が充填されているカップであって、被計量物の充填時点から最も時間を経ているカップ、の被計量物を優先的に選定して排出する。



【特許請求の範囲】

【請求項1】 最先充填カップの計量値が常に組合せ計算の構成数値の一つとなる組合せ計量方法であって、所定回数の組合せ計算でその許容範囲に収まらずに組合せ不良となる場合に、該最先充填カップの被計量物を排出することを特徴とする組合せ計量方法。

【発明の詳細な説明】

【0001】

【発明が属する技術分野】本発明は、組合せの重量測定方法、すなわちその合計重量または数量が要求値に最も近い物品の組み合わせを選ぶ計量方法に関する。

【0002】

【従来の技術】小さな単位物でかつランダムな量をもつものをある一定量に組み合わせて集合させる自動計量方式は、従来より種々存在する。そしてその自動計量装置は、計量物を複数の計量機とそれに対応する組合せホッパーの組を水平1列又は平面円形状に配置し計量物を組み合わせていくタイプと、一台又は数台の計量機と計量機よりも多数の組合せホッパーを水平循環又は垂直循環に配置し、循環回転させ、組み合わされた製品を排出するタイプがある。

【0003】そして、これらの装置を用いた従来の自動組合せ計量方式においては、例えば、特公昭54-14946号公報、特公昭58-48845号公報等に記載されているように、組合せ計算は計量した計量値全てについてその組合せを演算していた。そのため、組合せ不良で選択されないものは、長時間にわたり製品の組合せ計量機装置内に滞留することがあった。循環型においても、選択されないまま数回循環させた後に排出されることがあった。

【0004】特公平04-14289号公報には、特定の計量機が最適の組み合わせに参加できずに長時間選択されずに製品の組合せ計量機装置内に残り、被計量物の品物が変質したり、品物が冷凍物の場合は溶けたす等の問題があることを示し、その解決策を提案している。すなわち、計量機1台当たりの品物の平均供給量に比較して、設定重量が大きい場合、複数回に分けて計量するのであるが、この多重組み合わせ計量方法において、複数回の計量の内、最終回の計量のみを高精度に行い、その他の計量演算では排出されにくい計量機を優先的に組み入れる構成としている。これにより、長時間排出しないための品物の劣化が防止でき、組み合わせ演算に加わらない計量機を減少させることができるとしている。

【0005】この計量システムにおいては、重量値の大きな計量機がある場合には、重量値の大きい計量機は最適の組合せには選択されにくくなり実質的には組合せ演算に参加する計量機が少なくなって、組合せ不良となる可能性が高くなるので、最終回以外の計量において、重量値の大きい計量機を優先的に選定して品物を排出している。各計量機からの入力重量を重い順に配列

し、重い順に重量値を加算し許容範囲内の組合せを求めている。

【0006】

【発明が解決しようとする課題】上記特公平04-14289号公報の計量システムは、複数回に分けて品物を計量する場合についてのものであり、一回で品物を計量する場合に対しては、長時間にわたり製品が組合せ計量機内に滞留してその品質に影響するということが、依然、問題として残っている。

【0007】

【課題を解決するための手段】長時間にわたる製品の組合せ計量機内での滞留を解決するために、本発明では、計量した順に排出する先入れ先出し法を採る。そのための手段として請求項1の発明では、最先充填カップの計量値が常に組合せ計算の構成数値の一つとなる組合せ計量方法であって、所定回数の組合せ計算で許容範囲に収まらずに組合せ不良となる場合に、該最先充填カップの被計量物を排出することを特徴としている。ここでいう最先充填カップとは、未だ組合せに選定されていない被計量物が充填されているカップであって、被計量物の充填時点から最も時間を経ているカップのことをいう。

【0008】

【発明の実施の形態】以下図面に示す実施の形態に基づいて本発明を詳細に説明する。図1は本発明の組合せ計量方式による垂直循環型自動計量装置の概略構成図である。図2は本発明の組合せ計量方式による水平循環型自動計量装置の概略構成図である。

【0009】図1において、例えばブロイラーの肉片等の被計量物50が自動分割投入機10より栈付きベルトコンベア11に供給される。矢印Aの方向に搬送された被計量物50は計量機12、ホッパ13からなる食材分割計量投入部14より搬送トレイ15が取り付けられ垂直に循環する循環搬送路16からなる循環搬送部17に送られる。被計量物は計量機12で計量される場合の他、ホッパ直下の搬送トレイ15-nの次の搬送トレイの位置に組合せカップが来たとき持ち上げて計量される場合もある。被計量物は循環搬送部17を矢印Bの方向に搬送され、その間に組合せ演算により選択された組合せカップは対応する保管容器18に被計量物を排出する。組合せ計量された製品は搬出コンベア19に排出され保管容器移載部20を矢印Cの方向に搬送される。

【0010】自動組合せ演算部21では最先充填カップの計量値が常に組合せ計算の構成数値の一つとなる組合せ計量方法をとる。

【0011】例えば、図1で、組合せカップ15-1、15-2、15-4を第1の合格組合せとし、組合せカップ15-3、15-6、15-7を第2の合格組合せとすれば、第1の合格組合せの充填物は保管容器18-1に集積され、次に、第2の合格組合せの充填物は保管容器18-2に集積される。

【0012】次の計算では、15-5が最先充填カップとなる。所定回数組合せ不良の場合は18aを通して排出され、この充填物は直ぐに10のSTART点へ戻される。そしてその次の計算では、15-8が最先充填カップとなり同様の計算が続く。このシステムでは先入れ先出しがほぼ完全に達成できる。そして食品素材が滞ることなく自動計量される。

【0013】図2は本発明の組合せ計量方式による水平循環型自動計量装置の概略構成図である。これは計量機の下に組合せカップを円形状に多数配置し組合せカップすなわち搬送トレイ15を水平循環させるものである。回転軸22にアーム23を放射状に取り付け、アーム23の先端に搬送トレイ15を配置する構成としている。

【0014】図2において、被計量物50は栈付きベルトコンベア11に供給される。矢印A2の方向に搬送された被計量物50は計量機12、ホッパー13からなる食材分割計量投入部14より搬送トレイ15が取り付けられ水平に循環する循環搬送路16からなる循環搬送部17に送られる。被計量物は循環搬送部17を矢印B2の方向に搬送され、その間に組合せ演算により選択された組合せカップは対応する保管容器18に被計量物を排出する。組合せ計量された製品は搬出コンベア19に排出され保管容器移載部20を矢印C2の方向に搬送される。

【0015】

【発明の効果】本発明は、以上説明したような形態で実施され、以下に記載されるような効果を奏する。 *

*【0016】最先充填カップの計量値が常に組合せ計算の構成数値の一つとなる組合せ計量方法をとるとともに、所定回数の組合せ計算で許容範囲に収まらず組合せ不良となる場合に、該最先充填カップの被計量物を排出するようにしたので、長時間にわたる製品の組合せ計量機内での滞留が防止される。

【図面の簡単な説明】

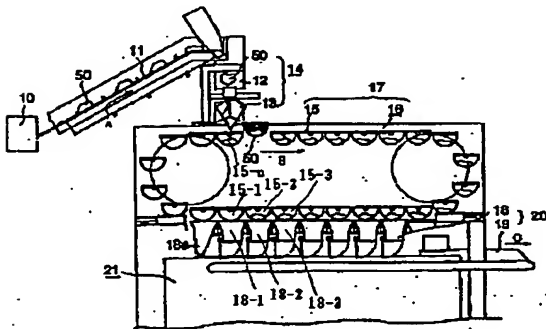
【図1】本発明の組合せ計量方式による垂直循環型自動計量装置の概略構成図である。

10 【図2】本発明の組合せ計量方式による水平循環型自動計量装置の概略構成図である。

【符号の説明】

- 10 自動分割投入機
- 11 栈付きベルトコンベア
- 12 計量機
- 13 ホッパー
- 14 食材分割計量投入部
- 15 搬送トレイ、組合せカップ
- 16 循環搬送路
- 17 循環搬送部
- 18 保管容器群
- 19 搬出コンベア
- 20 保管容器移載部
- 21 自動組合せ演算部
- 22 回転軸
- 23 アーム

【図1】



【図2】

